INTERNSHIP/FINAL THESIS – Project Wearable Breathing Trainer (isolation)

Chronic respiratory disorders such as asthma and dysfunctional breathing (DB) are common in childhood. Children with respiratory disorders are frequently referred to a physical therapist, who educates children in self-assessment and works on improvement of breathing technique. In this context, children are asked to perform further breathing retraining exercises at home. However, these exercises are often not engaging, and children are not likely to be self-motivated to do these exercises, whereas engagement and motivation to sustain an active involvement is key to a successful outcome of therapy.

Here, smart clothing could offer a solution. A wearable breathing trainer has the potential to increase the training frequency at home and therefore decrease contact moments with the physiotherapist. By providing feedback and motivation, the breathing trainer could help the child to gain the skills to cope with asthma or solve the problem of dysfunctional breathing. A current challenge in product development is the covering of electrodes for electrical isolation

TASK DESCRIPTION

You will work within Research group SFT, at the textile lab in the Epy Drost building on the integration of several functionalities of the vest, into a comfortable, functional textile. Your focus area within smart textiles is exploring pro's and con's between different ways of isolating conductive tracks. The point of this is to prevent shortcuts and to avoid unwanted exposure of the child to certain currents. You'll do this by comparing available options in the current state of technology, collecting requirements, discussing with project partners and mainly, by prototyping. Prototyping covers making relevant choices technique and material, such as 3D printing, knitting, embroidery, overmoulding, lamination. After your project we'll be able to choose relevant isolation methods for each part of the prototype. You'll collaborate with material experts, designers, and textile engineers within research group, and get the opportunity to involve the whole project team (UT, MST, Deventer Ziekenhuis, Elitac Wearables, among others)

PRACTICAL INFORMATION

- **Student profile:** You are a Textile or design student (or similar) with an interest in smart textiles; You can do the project either as an internship or graduation research. You have experience in working with textiles and have knowledge of relevant technologies (such as knitting, weaving, embroidery, sewing,…) so you can make choices for relevant techniques to use in prototyping.
- We are looking for a student that can connect different fields of expertise, who is hands-on in his/her approach. You will mainly work independently in the lab, but you're pro-active in including relevant partners in your research, as a group we work together to achieve the best results in our projects.
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- **Research group Sustainable and Functional Textiles: saxion.nl/sft**